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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/799,001

03/12/2004

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LLP113US

7567

29393 7590 10/19/2007
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EXAMINER

FLORES, LEON

ART UNIT

PAPER NUMBER

2611

NOTIFICATION DATE

DELIVERY MODE

10/19/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing@eschweilerlaw.com

Office Action Summary	Application No. 10/799,001	Applicant(s) SCHMANDT ET AL.	
	Examiner Leon Flores	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims (1, 3, 6, 13 & 16) have been considered but are moot in view of the new ground(s) of rejection.

Response to Remarks

Independent Claim 1

Applicant asserts that, *"it seems that a common time period (i.e., the time period for ten tests to be evaluated) is used for all channels to classify the individual channel as "good" or "bad." In contrast, presently amended claim 1 states that detecting erroneous transmissions occurs on the frequency channel at a time that is independent of the other channels. Thus, one channel could detect erroneous transmissions during one time period, and another channel could detect erroneous transmissions during another time period that is independent of the first time. Therefore, the invention of present claim 1 allows interference to be determined in a flexible manner that is not taught by the prior art of record"*.

The examiner respectfully disagrees. The reference of Gan does suggest that the channel performance is determined at one time and selected based on that performance a set of channels based on channel selection criteria. And then determined at a later time and select another set of channels based on that latter performance. (See col.4, lines 38-45, and claim 14) Subsequently, Gan also teaches that because interference may change over time, it may be useful to periodically change the set of channels being used. This is due to the fact that some previous good

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channels may become bad and vice versa. (See col. 20, lines 43-53) Because of this, testing of each channel must be performed at different time intervals in order to identify with channel is working properly (interference-free) and which one is not. (interference) Furthermore, one skilled in the art would know that in a FH communication system frequency hops from one frequency to another at a different time interval. And each of these channels must be tested to assure that interference is not present at that particular time interval. However, taking the contrary, the examiner has issue a new ground of rejection to substantiate for this limitation.

Independent Claim 13

See response in claim 1 above

Dependent Claim 3

Applicant asserts that, *"Gan does not increment a counter upon erroneous transmission. For example, in Channel 0, all seven slaves have individually determined the channel is "bad", yet the total votes is still "0". Thus, assuming the total votes started at "0", a counter has not been incremented upon erroneous transmission. Secondly, Gan does not decrement a counter upon error-free transmission. For example, in Channel n-1, all eight nodes (i.e., the master and seven slaves) have determined the channel is "good", but the total number of votes is eight. Therefore, Gan actually increments the counter upon error-free transmission in stark contrast to the present claims, which require that the counter be decremented upon error-free transmission"*.

The examiner respectfully disagrees. The reference of Gan does suggest that in table 1, ten tests are conducted on each channel. When the channel is found to be a bad channel the test result will yield low or high, depending which type of test is being performed. Thus, incrementing the number of low or high counts for each channel. And vice versa for good channels. Furthermore, it's up to the designer to decide if he/she wants to increment/decrement the counter when there exists erroneous/error-free transmission. However, taking the contrary, the examiner has issue a new ground of rejection to substantiate for this limitation.

Dependent Claim 6

Applicant asserts that, "Gan does not teach measuring the external signal strength during unused timeslots, as recited in claim 6".

The examiner respectfully disagrees. One skilled in the art would know that in a FH communication system testing of the channels is mainly performed at a time when that specific channel is not in used. Testing of the channels is not performed at a time when that specific channel (frequency) is in use. However, taking the contrary, the examiner has issue a new ground of rejection to substantiate for this limitation.

Dependent Claim 16

See response in claim 3 above.

Claim Objections

1. **Claims (1 & 2) are objected to because of the following informalities:** The limitation "if" should be replaced with "when" in order to avoid indefiniteness. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. **Claims (1-2, 4-5, 11-14 & 18) are rejected under 35 U.S.C. 103(a) as being unpatentable over Gan et al. (hereinafter Gan) (US Patent 7,027,418 B2)**

Re claim 1, Gan discloses a method for selecting frequency channels in a data transmission method that uses a frequency hopping method, comprising: determining an existence of interference on a frequency channel by detecting multiple erroneous transmissions in the frequency channel at a time that is independent of the other

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channels (See col. 7, lines 51-55); eliminating the frequency channel from a frequency hopping sequence if a determination is made that interference exists thereon (See col. 6, lines 30-34); measuring a strength of external signals within a frequency range of an eliminated frequency channel (See col. 6, lines 47-48, 50-54, 63 – col. 7, line 2, col. 7, lines 51-55, col. 12, lines 36-39); and reinserting the frequency channel into the frequency hopping sequence if the measured strength is below a prescribed threshold value (See col. 20, lines 46-52, col. 12, lines 36-39. Re-testing and re-determination of the channel performance must be done in order to select good channels and not bad channels. This is due to interference changing over time - some “previously good channels may become bad and vice versa”. One way to retest the channels is to measure the RSSI of the channel. If “there is no interference, the RSSI will be low”.

But the reference of Gan fails to explicitly teach detecting multiple erroneous transmissions in the frequency channel at a time that is independent of the other channels.

However, the reference of Gan does suggest that the channel performance is determined at one time and selected based on that performance a set of channels based on channel selection criteria. And then determined at a later time and select another set of channels based on that latter performance. (See col.4, lines 38-45, and claim 14, and arguments.)

Therefore, it would have been obvious to one of ordinary skills in the art to have incorporated this feature for the benefit of optimizing the FH communication system.

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Re claim 2, Gan further discloses that wherein interference in the frequency channel is determined if a number of erroneous transmissions exceeds a number of error-free transmissions by a prescribed threshold value within a predetermined period of time. (See col. 15, lines 25-33 and table 1. In table 1, Channels 1 & 2 are classified as bad channels because the tests results shows that the number of error exceeds the number of error-free.)

Re claim 4, Gan further discloses that wherein detecting an erroneous transmission comprises using checksums that are added to block-transmitted data at an end thereof. (See col. 13, lines 13-18)

Re claim 5, Gan further discloses that wherein using checksums comprises adding a CRC (Cyclic Redundancy Check) code to each data block at the end thereof. (See col. 13, lines 30-38)

Re claim 11, Gan further discloses that a method for data transmission between at least two stations via radio links using the frequency hopping method and the frequency channel selection method of claim 1. (See col. 17, lines 35-37)

Re claim 12, Gan further discloses that wherein the method is based on one of the transmission standards Bluetooth, WDCT, DECT or HomeRF. (See col. 7, lines 51-

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52)

Claim 13 has been analyzed and rejected w/r to claim 1 above.

Claim 14 has been analyzed and rejected w/r to claim 2 above.

Claim 18 has been analyzed and rejected w/r to claim 1 above.

4. Claims (3, 6, 8-10, 15-16 & 19) are rejected under 35 U.S.C. 103(a) as being unpatentable over Gan et al. (hereinafter Gan) (US Patent 7,027,418 B2), as applied to claims 1 & 13 above, and further in view of Knuth et al. (hereinafter Knuth) (US Patent 5,418,839)

Re claim 3, Gan further discloses that wherein each frequency channel has a counter associated therewith, and further comprising incrementing the counter upon erroneous transmission, and determining interference in the frequency channel when the count exceeds a prescribed threshold value. (In table 1, ten tests are conducted on each channel. When the channel is found to be a bad channel the test result will yield low or high, depending which type of test is being performed. Thus, incrementing the number of low or high counts for each channel. And vice versa for good channels.

But the reference of Gan fails to explicitly teach and decrementing the counter upon error-free transmission.

However, Knuth does. (See fig. 2: 17 & col. 6, lines 44-60) Knuth discloses a system for providing a channel selection apparatus that optimizes the selection of an

interference-free channels by adding to a counter when interference is present and subtracting when there is no interference present.

Therefore, taking the combined teachings of Gan and Knuth as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Gan, in the manner as claimed and as taught by Knuth, for the benefit of optimizing the selection of channels in the communication system.

Re claim 6, the combination of Gan and Knuth further discloses that, wherein the data transmission method comprises a timeslot method, and measuring the external signal strength comprises measuring during unused timeslots. (In Knuth, see col. 12, lines 57-65)

Re claim 8, the combination of Gan and Knuth further discloses that wherein measuring the external signal strength further comprises decrementing the counter if the measured strength is below a prescribed threshold value. (In Gan, see col. 15, line 1-25 and table 1. In table 1, ten tests are conducted on each channel. In this case lets take channel "n-1". These tests may be comprised of measuring the RSSI of each channel. If the RSSI is found to be low, the test result will yield high, thus decrementing the number of counts and increasing the possibilities that channel "n-1" will yield to be a good channel, or in Knuth, see fig. 2: 17 & col. 6, lines 44-60. Furthermore, it's up to the designer to decide if he/she wants to increment/decrement either the erroneous transmission or the error-free transmission to determine if the channel can be classified

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as either good or bad.)

Re claim 9, the combination of Gan and Knuth further discloses that wherein the frequency channel is reinserted into the frequency hopping sequence as soon as the count reaches the value zero. (In Gan, see table 1, if the number of error is zero, meaning that each test performed on each channel is found to be high, the channel will automatically be classified as a good channel. Furthermore, if we set the counter equal to the total number of tests performed on each channel, and every single test performed on each channel yields low, then we can say that the channel is classified as a bad channel and the counter has reached zero. Furthermore, in Knuth, see col. 7, lines 4-15. One of the advantages of incrementing and decrementing the counter is to avoid the channel counter from reaching maximum.)

Re claim 10, the combination of Gan and Knuth further discloses that wherein measuring the external signal strength further comprises setting the counter to its maximum count when the measured strength exceeds a prescribed threshold value. (See col. 15, line 4 & table 1. If the RSSI is found to be high, the test result will yield a bad channel. Furthermore, it's up to the designer to decide if he/she wants to set the counter to maximum/minimum whenever the test result yield low or high. Subsequently, high and low can be interpreted as either being 1 or 0, respectively. Furthermore, in Knuth, see col. 7, lines 4-15. One of the advantages of incrementing and decrementing the counter is to avoid the channel counter from reaching maximum.)

Claim 15 has been analyzed and rejected w/r to claim 3 above.

Claim 16 has been analyzed and rejected w/r to claim 3 above.

Claim 19 has been analyzed and rejected w/r to claim 8 above.

5. Claims (1-2, 4-5, 11-14 & 18) are rejected under 35 U.S.C. 103(a) as being unpatentable over Gan et al. (hereinafter Gan) (US Patent 7,027,418 B2) in view of Gillis et al. (hereinafter Gillis) (US Patent 5,323,447)

Re claim 1, Gan discloses a method for selecting frequency channels in a data transmission method that uses a frequency hopping method, comprising: determining an existence of interference on a frequency channel by detecting multiple erroneous transmissions in the frequency channel at a time that is independent of the other channels (See col. 7, lines 51-55); eliminating the frequency channel from a frequency hopping sequence if a determination is made that interference exists thereon (See col. 6, lines 30-34); measuring a strength of external signals within a frequency range of an eliminated frequency channel (See col. 6, lines 47-48, 50-54, 63 – col. 7, line 2, col. 7, lines 51-55, col. 12, lines 36-39); and reinserting the frequency channel into the frequency hopping sequence if the measured strength is below a prescribed threshold value (See col. 20, lines 46-52; col. 12, lines 36-39. Re-testing and re-determination of the channel performance must be done in order to select good channels and not bad channels. This is due to interference changing over time - some “previously good channels may become bad and vice versa”. One way to retest the channels is to measure the RSSI of the channel. If “there is no interference, the RSSI will be low”.

But the reference of Gan fails to explicitly teach detecting multiple erroneous transmissions in the frequency channel at a time that is independent of the other channels.

However, Gillis does. (See col. 9, line 60 – line 52) Gillis discloses a FH communication system that identifies the time slot in which a channel has to be changed. Furthermore, one skilled in the art would know that in a FH communication system frequency hops from one frequency to another at a different time interval. And each of these channels must be tested to assure that interference is not present at that particular time interval.

Therefore, taking the combined teachings of Gan and Gillis as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Gan, in the manner as claimed and as taught by Gillis, for the benefit of optimizing the FH communication system.

Re claim 2, the combination of Gan and Gillis further discloses that wherein interference in the frequency channel is determined if a number of erroneous transmissions exceeds a number of error-free transmissions by a prescribed threshold value within a predetermined period of time. (In Gan, see col. 15, lines 25-33 and table 1. In table 1, Channels 1 & 2 are classified as bad channels because the tests results shows that the number of error exceeds the number of error-free.)

Re claim 4, the combination of Gan and Gillis further discloses that wherein detecting an erroneous transmission comprises using checksums that are added to block-transmitted data at an end thereof. (In Gan, see col. 13, lines 13-18)

Re claim 5, the combination of Gan and Gillis further discloses that wherein using checksums comprises adding a CRC (Cyclic Redundancy Check) code to each data block at the end thereof. (In Gan, see col. 13, lines 30-38)

Re claim 11, the combination of Gan and Gillis further discloses that a method for data transmission between at least two stations via radio links using the frequency hopping method and the frequency channel selection method of claim 1. (In Gan, see col. 17, lines 35-37)

Re claim 12, the combination of Gan and Gillis further discloses that wherein the method is based on one of the transmission standards Bluetooth, WDCT, DECT or HomeRF. (In Gan, see col. 7, lines 51-52)

Claim 13 has been analyzed and rejected w/r to claim 1 above.

Claim 14 has been analyzed and rejected w/r to claim 2 above.

Claim 18 has been analyzed and rejected w/r to claim 1 above.

6. Claims (3, 6, 8-10, 15-16 & 19) are rejected under 35 U.S.C. 103(a) as being unpatentable over Gan et al. (hereinafter Gan) (US Patent 7,027,418 B2) and Gillis et al. (hereinafter Gillis) (US Patent 5,323,447), as applied to claims 1 & 13 above, and further in view of Knuth et al. (hereinafter Knuth) (US Patent 5,418,839)

Re claim 3, the combination of Gan and Gillis further discloses that wherein each frequency channel has a counter associated therewith, and further comprising incrementing the counter upon erroneous transmission, and determining interference in the frequency channel when the count exceeds a prescribed threshold value. (In table 1, ten tests are conducted on each channel. When the channel is found to be a bad channel the test result will yield low or high, depending which type of test is being performed. Thus, incrementing the number of low or high counts for each channel. And vice versa for good channels.

But the combination of Gan and Gillis fails to explicitly teach decrementing the counter upon error-free transmission.

However, Knuth does. (See fig. 2: 17 & col. 6, lines 44-60) Knuth discloses a system for providing a channel selection apparatus that optimizes the selection of an interference-free channels by adding to a counter when interference is present and subtracting when there is no interference present.

Therefore, taking the combined teachings of Gan, Gillis and Knuth as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Gan, in the manner as claimed and as taught by Knuth, for the benefit of optimizing the selection of channels in the communication system.

Re claim 6, the combination of Gan, Gillis and Knuth further discloses that, wherein the data transmission method comprises a timeslot method, and measuring the external signal strength comprises measuring during unused timeslots. (In Knuth, see col. 12, lines 57-65)

Re claim 8, the combination of Gan, Gillis and Knuth further discloses that wherein measuring the external signal strength further comprises decrementing the counter if the measured strength is below a prescribed threshold value. (In Gan, see col. 15, line 1-25 and table 1. In table 1, ten tests are conducted on each channel. In this case lets take channel "n-1". These tests may be comprised of measuring the RSSI of each channel. If the RSSI is found to be low, the test result will yield high, thus decrementing the number of counts and increasing the possibilities that channel "n-1" will yield to be a good channel, or in Knuth, see fig. 2: 17 & col. 6, lines 44-60. Furthermore, it's up to the designer to decide if he/she wants to increment/decrement either the erroneous transmission or the error-free transmission to determine if the channel can be classified as either good or bad.)

Re claim 9, the combination of Gan, Gillis and Knuth further discloses that wherein the frequency channel is reinserted into the frequency hopping sequence as soon as the count reaches the value zero. (In Gan, see table 1, if the number of error is zero, meaning that each test performed on each channel is found to be high, the channel will automatically be classified as a good channel. Furthermore, if we set the

counter equal to the total number of tests performed on each channel, and every single test performed on each channel yields low, then we can say that the channel is classified as a bad channel and the counter has reached zero. Furthermore, in Knuth, see col. 7, lines 4-15. One of the advantages of incrementing and decrementing the counter is to avoid the channel counter from reaching maximum.)

Re claim 10, the combination of Gan, Gillis and Knuth further discloses that wherein measuring the external signal strength further comprises setting the counter to its maximum count when the measured strength exceeds a prescribed threshold value. (See col. 15, line 4 & table 1. If the RSSI is found to be high, the test result will yield a bad channel. Furthermore, it's up to the designer to decide if he/she wants to set the counter to maximum/minimum whenever the test result yield low or high. Subsequently, high and low can be interpreted as either being 1 or 0, respectively. Furthermore, in Knuth, see col. 7, lines 4-15. One of the advantages of incrementing and decrementing the counter is to avoid the channel counter from reaching maximum.)

Claim 15 has been analyzed and rejected w/r to claim 3 above.

Claim 16 has been analyzed and rejected w/r to claim 3 above.

Claim 19 has been analyzed and rejected w/r to claim 8 above.

Allowable Subject Matter

7. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re claim 17, prior art fails to teach/suggest the further limitation of, *"wherein using both the erroneous and error free transmissions comprises: incrementing a first counter each time an erroneous transmission is identified within the predetermined time period; incrementing a second counter each time an error free transmission is identified within the predetermined time period; generating a ratio based the counts of the first and second counters after the predetermined time period has elapsed; and determining that interference exists on the channel if the ratio exceeds a predetermined threshold"*.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
September 26, 2007


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER